

Title of the Invention: System and Method for Design, Tracking, Measurement, Prediction and Optimization of Data Communication Networks Inventor's Name: Rappaport et al.

Docket No./Application No.: 09/668,145

Figure 1: Example transmission of data over a communications network

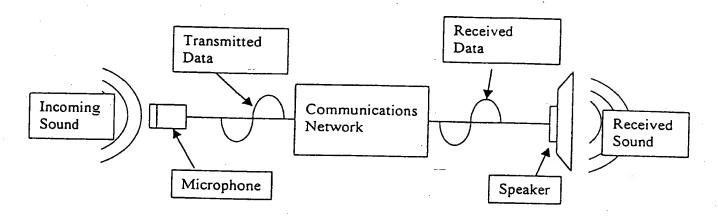
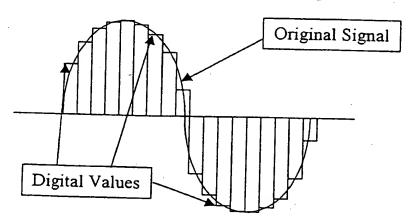


Figure 2: Creation of a digital signal from an analog signal



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Figure 3: Illustration of the difference between bits, packets and frames.

Frames -Packets - Self length of bits with Bits - 1 or 0 contained lengths a certain pattern or smallest unit of of bits with header format to indicate information and or footer first and last bits hlocks of hits

Figure 4: Illustration of the data displayed in each node of the Tree View of a data communications network.

•Name and type of network device

- -Specifications
 - •Electrical, Optical, and Electromagnetic specific operating parameters
- ·Software, Firmware and Hardware version numbers and settings -Physical connectors
 - •Specifications and setting specific to each connector



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Figure 5: Method for creating a 3-D site specific model of the environment

Create a 3-D site-specific model of the environment where the network will be located Layout all network devices in the created environment Add a device to current logical tree layout of network devices known as the Bill of Materials Place the added device in the precise, 3-D location in the modeled environment where the actual network device is located Configure the modeled device parameters or download the current settings from the actual device Add another Yes device? No Modeled environment now ready for data collection, performance prediction, performance visualization and system optimization

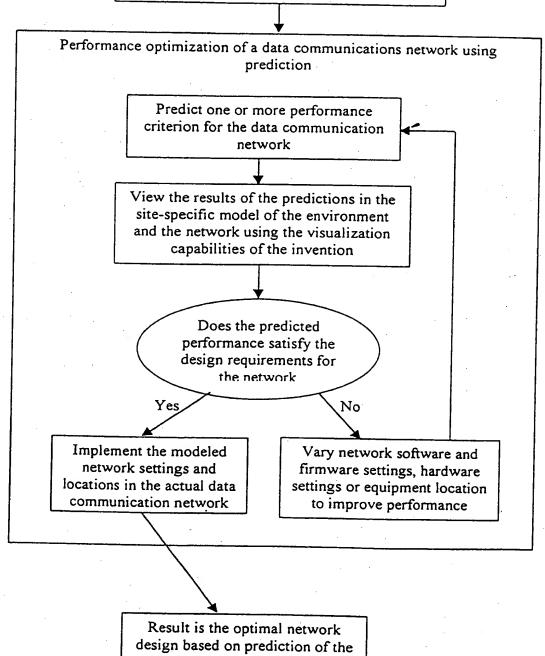
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Figure 6: Method for optimizing a data communications network using predictions

Prediction optimization procedure needs a model of the environment and a model of data communications equipment



desired performance criteria

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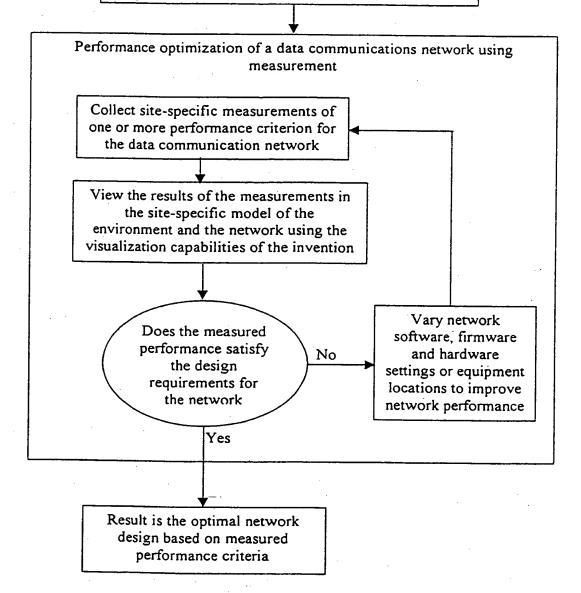
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Figure 7: Method for optimizing a data communications network using measurements

Measurement optimization procedure needs a model of the environment and the data communications equipment and site-specific measurements of one or more performance criteria



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Figure8: Method for optimizing a data communications network using predictions and measurements.

